

Table 1. DEQ Proposed Modifications to EPA's Table on
Calculation of ecological toxicity reference values (TRV's) for petroleum components in water and sediment using a no effect tissue residue approach TRV development methodology.

Chemical	Surrogate Compound	Molecular Weight	Molecular Weight(k)	Surrogate Carbon Content	BCF ^(a)	log BCF	log Koc ^(b)	log Koc ^(k)	log Kow ^{(c)(m)}	Toxic tissue residues				Calculated maximum water solubility (µg/L)	Estimated maximum water solubility(k) (µg/L)	Water TRV ^(i,j) µg/L	Sediment RBSC mg/kg ^(g,j)	Sediment RBSC mg/kg OC ^(h)
Alaska ecological TPH TRV's																		
C ₆ - C ₁₀ (Alaska gasoline range organics)	n-Octane	114	114	8	240	2.38	4.03	4.03	4.10	2	0.24	228	27.4	1,259	1,259	114	12.2	1,219
C ₁₀ - C ₂₅ (Alaska diesel range organics)	n-Heptadecane	240	240	17	764,072	5.88	8.08	8.08	8.22	2	0.24	480	57.6	0.014	0.014	90.6	9,063	
C ₂₅ - C ₃₆ (Alaska residual range organics)	n-Hentriacontane	437	437	31	2.1E+11	11.33	14.38	14.38	14.63	2	0.24	874	104.9	2.8E-10	2.8E-10	NA	1,175	117,476
Aliphatics (Oregon definitions)																		
EC ₆ - EC ₆	n-Hexane	86.17	81	6	161	2.21	2.90	3.0	3.29	2	0.24	162	19.4	15,849	36,000	121	1.21	121
EC ₆ - EC ₈	n-Heptane	100.203	100	7	447	2.65	3.60	3.6	3.78	2	0.24	200	24.0	4,467	12,000	54	2.14	214
EC ₈ - EC ₁₀	n-Nonane	128.257	130	9	3,256	3.51	4.50	4.8	4.76	2	0.24	260	31.2	355	120	9.6	6.05	605
EC ₁₀ - EC ₁₂	n-Decane	156.34	160	11	14,624	4.17	5.40	5.9	5.74	2	0.24	320	38.4	28	30	2.6	20.9	2,086
EC ₁₂ - EC ₁₆	n-Tetradecane	198.4	200	14	4,292	3.63	6.70	6.7	7.22	2	0.24	400	48.0	0.63	0.35	NA	560	56,049
EC ₁₆ - EC ₂₁	n-Octadecane	254.5	270	18	41	1.62	8.80	8.6	9.18	2	0.24	540	64.8	0.0040	0.0015	NA	NC	NC
EC ₂₁ - EC ₃₄	n-Heptacosane	380.75		27	0.00081	-3.09	10.00		13.60	2	0.24			0.000000045				
Aromatics (Oregon definitions)																		
EC ₈ - EC ₁₀	Ethylbenzene	106.2	120	8	120	2.08	3.20	2.9	3.15	2	0.24	240	28.8	1,259	130,000	240	1.90	190
EC ₁₀ - EC ₁₂	2-Methylnaphthalene	142.19	130	11	395	2.60	3.40	3.2	3.72	2	0.24	260	31.2	28	47,000	79	1.25	125
EC ₁₂ - EC ₁₆	Phenanthrene	178.24	150	14	1,803	3.26	3.70	3.8	4.46	2	0.24	300	36.0	0.63	9,300	20	1.26	126
EC ₁₆ - EC ₂₁	Chrysene	228.3	190	18	12,864	4.11	4.20	4.2	5.61	2	0.24	380	45.6	0.0040	560	4	0.6	56
EC ₂₁ - EC ₃₄	Coronene	300.36	240	24	3,783	3.58	5.10	5.1	7.28	2	0.24	480	57.6	0.0000020	29	15	19	1,917
Constituents																		
n-Hexane			86		573	2.76		2.9	3.90	2	0.24	172	20.6		18,000	36	0.32	32
Benzene			78		14	1.15		1.8	2.13	2	0.24	156	18.7		1,750,000	1319	0.78	78
Toluene			92		50	1.70		2.3	2.73	2	0.24	184	22.1		526,000	443	0.81	81
Ethylbenzene			106		120	2.08		2.6	3.15	2	0.24	212	25.4		169,000	212	0.77	77
Total Xylenes			106		123	2.09		2.6	3.16	2	0.24	212	25.4		175,000	207	0.80	80
1,2,4-Trimethylbenzene			117		327	2.51		3.6	3.63	2	0.24	234	28.1		57,000	86	3.17	317
1,3,5-Trimethylbenzene			117		211	2.32		2.9	3.42	2	0.24	234	28.1		50,000	133	1.09	109
Naphthalene			128		164	2.22		3.3	3.30	2	0.24	256	30.7		31,000	187	3.73	373

a - BCF is the bioconcentration factor, the ratio between a chemical concentration in tissue and water, L/kg
 b - Koc = organic carbon-water partition coefficient
 c - Kow = octanol-water partition coefficient
 d - mmol/kg = millimoles/kilogram
 e - LOER = Lowest Observed Effect Residue
 f - TRV = Toxicity Reference Value
 g - Bulk sediment TRV's in this column based on an assumed 1% organic carbon content of sediment
 h - mg/kg OC = mg chemical/kg organic carbon in sediment
 i - NA = Not Applicable, TRV would have to exceed maximum water solubility of these fractions
 j - NC = Not Calculable, calculated TRV exceeds 100% pure surrogate compound
 k - Source of values for TPH fractions and constituents is TPHCWG 1997, Volume 3, Table 8.
 m - Source of Kow values for constituents is RAIS Database, 2015.